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ABSTRACT

A study examined the history, practice, and quality of cooperative education (CE) in two-year colleges in and around Cincinnati, Ohio. CE proved to be firmly ingrained and widespread in Cincinnati. The most common model of CE found in Cincinnati was the "alternating" model, wherein students complete 2-6 cycles of attending school for 10-13 weeks and then work with employers for the same number of weeks. Among the numerous benefits of CE cited by students, employers, and schools were the following: CE programs allow employers to screen and "grow their own" employees; CE gives students direct knowledge about the workplace and applications of school-based learning in the workplace; and CE strengthens schools' links to employers. Although program quality remained high on employers' lists of concerns regarding CE, both employers and education providers had screening mechanisms to ensure the quality of CE programs whether they followed "alternating" or "parallel" cycles of school- and work-based learning. Cincinnati employers and education providers were found to have unspoken agreements that each would continue working to maintain a "high quality equilibrium" in which the other's expectations would continue to be met. (Contains 26 references.) (MN)

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National Center for Research in Vocational Education

University of California, Berkeley

Technical Assistance Report

Co-operative Education in Cincinnati: Implications for School-to-Work Programs in the U.S.

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University of California at Berkeley

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CO-OPERATIVE EDUCATION IN CINCINNATI:

IMPLICATIONS FOR SCHOOL-TO-WORK PROGRAMS IN THE U.S.*

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Interest in school-to-work programs combining school-based learning and work-based learning has expanded substantially in the past few years, particularly with the passage of the School-to-Work Opportunities Act of 1994. However, there are relatively few examples or models of school-to-work programs in this country from which individuals attempting to develop new programs might learn; many of the recent experimental efforts are too new or too special to provide much guidance.[1] This paper describes a naturally-occurring "experiment" in work-based learning that is quite long-lived and widespread: the cooperative education programs that take place in the two-year colleges of the Cincinnati, Ohio area. For special historical reasons, co-op was first established in that region and has persisted. Every two-year college in the area offers co-op, and a large number of employers hire co-op students. The results provide a variety of lessons for others attempting to develop school-to-work programs.

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[1] For efforts to examine the existing experimental programs, see Hamilton (1990); Pauly, Kopp, and Haimson (1994); and Goldberger, Kazis and O'Flanagan (1994); for efforts to distill the lessons of existing work-based learning, see Stern et al. (1995).

I. The History and Scale of Co-op Education in Cincinnati

Cooperative education in this country was started in 1906 by the dean of engineering at University of Cincinnati, Herman Schneider, to provide work-based experience to engineering students (Ryder, 1987). Schneider, concerned as present critics are with the adequacy and relevance of education to future work, identified two problems that could be addressed through cooperative education: Most students worked at least part-time, but usually in jobs unrelated to their future careers; and there were components to the engineering curriculum that could not be taught in a classroom setting, contributing to the fact that many entry level workers lacked appropriate experiences. Expanding the opportunities available to students through a combination of work-based and school-based learning activities promised to solve these problems.[2]

Most of the early programs were in engineering, primarily at four-year colleges. In 1917, the program at the University of Cincinnati was extended from engineering to business administration. Four years later, cooperative education in liberal arts programs was started with the idea of providing a "clear understanding of contemporary society" to students who otherwise were on sheltered campuses (Ryder, 1987, p. 9). Co-op programs were extended to two-year colleges in Cincinnati in 1937 when the Ohio Mechanics Institute — then a private institution, later affiliated with the University of Cincinnati as the Ohio College of Applied Science (OCAS) — adopted co-op because the lure of part-time jobs would increase enrollments. Employers in the area were used to the co-op plan, because of the University of Cincinnati's experience, and had recommended the approach when the Institute decided to offer associate degree programs in mechanical and electrical engineering technology. The programs at Cincinnati Technical College started in the late 1960s, partly in response to a perceived void in fields where OCAS did not provide training (House, 1977); as in the earlier case of the Ohio Mechanics Institute, the introduction of co-op programs was eased by the prevalence of this approach in Cincinnati. And, parallel to the growth of community colleges in general, there was tremendous growth in co-op education in two-year colleges during the 1960s (Ryder, 1987).

Currently, all of the community colleges in the Cincinnati area offer students the opportunity to participate in co-op education. Three educational institutions offer associate degrees in the greater Cincinnati area. One is a branch campus of the University of

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[2] Many of these same elements -- the need for students to earn money while in college, incongruities in the way students are taught and how they learn -- are present today, yet co-op exists in only small pockets throughout the country. While almost 900 colleges report having some sort of co-op program, the extent to which it is part of the mainstream educational experience for students is difficult to determine. See especially Stern et al. (1994) and Bragg, Hamm, and Trinkle (1995).

Cincinnati — the Ohio College of Applied Science (OCAS) — and offers both two and four year degrees; co-op is a mandatory part of each of their programs. Another, Cincinnati Technical College (CTC), offers two-year Associate of Applied Science degrees and certificates in three areas: business, engineering technology, and allied health. Co-op is mandatory in business and engineering, and some version of clinical or work experience is part of the allied health programs. (CTC has recently become a comprehensive community college, now called Cincinnati State Technical and Community College, though we continue to refer to it by its name when we visited it.) The third college, Sinclair Community College, is located about 60 miles north of Cincinnati in Dayton.[3] Co-op is an optional part of the curriculum, with the exception of students in Business programs who are required to do some sort of internship, and tends to take different forms than in the other two colleges. In addition, the area vocational schools in the area — the Great Oaks schools, including four area vocational schools that enroll both secondary and postsecondary students — all include co-op, though on a much smaller scale than the community colleges.[4] And co-operative education has migrated across the state line into northern Kentucky as well, where a number of area vocational schools and community college have also adopted co-operative education. However, in this paper we concentrate on practices in the Cincinnati area community colleges, where co-op has been best developed.

There are several distinct practices followed in Cincinnati. The most common form of co-op in Cincinnati is the "alternating" model: typically, a student goes to school for a 10 or 13 week term, and then works with an employer for the same amount of time, repeating this cycle two to six times. It is considered a more intensive learning experience for students since their focus is not split between school and work. At OCAS and CTC, almost all co-op students follow this pattern. At Sinclair, however, the majority of the arrangements (90 percent) are parallel programs, which split the day between school (usually in the morning) and work (in the afternoon). The parallel method has been greatly influenced by the characteristics of students attending community colleges: older, non-traditional students with financial needs different from those of traditional undergraduates are thought to be better served by the parallel program because of the ability to earn a salary

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[3] We included Sinclair because it was frequently mentioned as a source of employees by Cincinnati's employers. In addition, the contrast between Sinclair, with a more traditional co-op program involving a small fraction of students, and those at OCAS and CTC, with mandatory co-op following an alternative pattern, is illuminating

[4] Great Oaks has two co-op programs that alternative periods of school and work, one in the area of automotive technicians enrolling perhaps 32 - 36 students a year, and another in electro-mechanical maintenance with about 8 students. While a number of other programs provide some work experience, they are extensive enough to be considered co-op programs.

while continuing in school. In addition, employers differ in their motives for participating in co-op education. Those who viewed co-op students as potential future workers tend to prefer arrangements which gave them the most exposure to students' ability to perform on-the-job task; they tend to prefer alternating co-ops, and they frequently rotate their co-op students so they are exposed to wide variety of occupations within the firm; they are more likely to provide co-op students with ancillary seminars, newsletters, and other forms of information about the firm. In contrast, employers who view co-op students as a source of efficient, inexpensive labor often use parallel programs; the practice of rotation around positions and providing related education is much less common.

Student enrollment in co-operative education programs in Cincinnati is quite high. At OCAS, all students matriculating towards a degree alternate terms in school and on job sites. The cooperative education program places about 300 different students in co-op annually, with 250 employers; this represents about 35 percent of the total day enrollment of about 850. (Evening students, who represent another 500 students, do not enroll in co-op.) Because of the structure of co-op at OCAS — where students typically spend ten weeks in school, followed by ten weeks on the job, alternating schooling and co-op over a two-year period — there are substantially more students placed in co-op each year than graduate; for example, in 1992, there were 94 baccalaureate candidates and 98 Associate degree candidates, all of whom participated in co-op. For the past ten years, over 93 percent of the graduates wanting full-time employment have reached that goal within the first few weeks following graduation, ranging from a low of 88 percent (in 1983 and 1984, which were years of recession) to a high of 96 percent (in 1985, 1986, and 1987, all years of substantial economic expansion).[5]

At Cincinnati Technical College, during Winter 1993 term, 531 students were placed in co-op positions; this represents about 21 percent of the enrollment of full-time students. (Total enrollment is about 5,500, though 55 percent of these are part-time students who are ineligible for co-op.) While co-op is supposedly mandatory at CTC, this requirement is somewhat misleading: According to the co-op coordinators, slightly over half of all enrolled students participate in co-op during any one term. The others fall into different categories: the largest group are enrolled in pre-tech or developmental courses (as described below), and therefore are ineligible for co-op; a large fraction (55 percent) attend part-time;, and do not necessarily enroll in co-op; a small percentage waive out of co-op based on their prior work experience; and some receive some kind of financial aid, such as state or federal assistance, that precludes them from being hired as co-ops. (College

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[5] These statistics are taken from OCAS Professional Practice and Career Placement Reports for 1991 and 1992.

coordinators are quite concerned with this latter group, who often have difficulty completing the programs and finding full-time employment without co-op experience.[6]) The result is that a large fraction of students enrolled are, in effect, ineligible or inappropriate for co-op.

At Sinclair Community College, where co-op is voluntary and often student-initiated, approximately 225 students are involved in co-op each term (about 1,000 students per year). This represents roughly one percent of the average student population of about 21,000 students, the majority (70 percent) of whom attend part-time. Close to 85 percent of the co-ops at Sinclair do so in a parallel format, where they take classes in the morning and work part-time in the afternoon. The largest group of co-ops is in the business technologies area, which has an internship requirement. Sinclair co-op coordinators use a data bank of about 500 local employers to find placements for students. In general, Sinclair's co-op program is more traditional — largely voluntary, with a much smaller fraction of students participating, and following a parallel format.

Another way to understand the magnitude of co-op education in Cincinnati's two-year colleges is to consider the size and purpose of these institutions. The two-year colleges in Cincinnati are, by urban standards, relatively small — much smaller than the institutions with enrollments in the order of 25,000 that one finds in many urban areas, and in Dayton. Furthermore, because OCAS and CTC are technical institutes with well-defined occupational programs, they probably attract students with relatively clear occupational goals — in contrast to most community colleges, many of whose students are "experimenters" trying to figure out what kinds of careers to follow. Even so, many of the students in OCAS and CTC are part-time students, or evening students, or are completing remedial coursework; the numbers of individuals who are relatively full-time students in occupational programs is therefore relatively small — and these are the individuals most likely to participate in co-op. This represents a kind of selection mechanism for "seriousness", with only those students with a serious commitment to a particular occupational area enrolling in co-op — a point to which we return in Section III, on the quality of the co-op program; therefore the numbers enrolled in co-op may seem small, but they are a large fraction of the seriously-committed occupational students.

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[6] A special problem involves the various income-conditioned programs available to students. Low-income students — including many minority students — may be eligible for Pell grants, or AFDC; but they are likely to earn enough as a co-op student so that they become ineligible for the grant, in effect forcing them to choose between a grant and co-op. In addition, JTPA clients may be made ineligible by the amount of employment they have in co-op. The problem in this case is that what is intended as an educational experience is treat by other federal programs as simply a form of employment; a change in eligibility procedures and earnings calculations would be necessary to give co-op programs special status.

Another way to assess the magnitude of co-op education is to examine the practices of employers. It is difficult to determine how widespread participation in co-op education is among employers in the area, since that would require a survey that no one has undertaken. However, in an earlier study of four local labor markets including Cincinnati, we interviewed 54 individuals representing 46 firms in the Cincinnati area, chosen at random from firms likely to hire any of six specific occupations,[7] as well as two individuals with broad knowledge of the labor market. All of these firms knew about co-op programs; of the 35 firms who had participated in co-op at one time or another, only one had discontinued its program, because of a general downsizing, and all of them expressed support for co-op. While the sample of firms interviewed cannot be considered a random sample of employers in the Cincinnati area — since it was chosen to contain six specific sub-baccalaureate occupations, and since small employers were under-represented — it does reflect a substantial cross-section of employers, and suggests that both the use of co-op students and support for he program is widespread.

In a more recent investigation of co-op education in Cincinnati, we interviewed only employers who were currently employing students in co-op arrangements.[8] These employers ranged in size and scope of their co-op programs. The smallest company, with twenty permanent employees and four co-op students, estimated that about one-third of their permanent employees came through as co-op students. One of the larger companies employs over 13,000 employees and about 100 co-op students in ten locations. This company also typically offers permanent positions to a majority of its co-ops upon graduation. This sample of employers cannot be used in any way to reflect the extent of co-op education in Cincinnati, of course, since the firms were chosen for their participation in co-op education; however, this sample does indicate that when firms participate in co-op, they often employ relatively substantial numbers of co-op students and do tend to hire them for permanent employment.

Another way to see the magnitude of two-year college co-op programs is to compare their numbers with the numbers employed. There are about 830 co-op students per year placed from the two two-year colleges in Cincinnati. In 1990, there were about 359,000 individuals age 20 - 64 in Harris County (where Cincinnati is located), of whom roughly one quarter (24.3 percent) had some college, or about 87,000 individuals. The

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[7] See Grubb, Dickinson, Giordano, and Kaplan (1992). The six occupations were electronics technicians, machinist, drafter, accountant, business occupations, and computer-related occupations. The important point is that this earlier study did not select firms according to the presence or absence of co-op education.

[8] Those interviewed included individuals from human resource divisions; in a few firms we interviewed the vice president for operations or the manager in charge of the co-op program. See Villeneuve and Grubb (1995, forthcoming)

number of new hires might have been in the neighborhood of 2,200,[9] and so it is plausible that one third to two fifths of new hires at the sub-baccalaureate level came from co-op programs. Over a period of time, such a pattern would obviously result in a considerable fraction of the labor force knowledgeable about co-op programs. Furthermore, several of the large and prominent firms in Cincinnati have made extensive use of co-o, further contributing to its reputation.

Although there is no complete survey of co-operative education and other work-based education[10], it seems relatively clear that co-op is much more widespread in Cincinnati than it is in any other community in the country.[11] It would, of course, be helpful to know what conditions led to the expansion and preservation of co-op programs in Cincinnati. Unfortunately, there is no clear reason why only Cincinnati has developed extensive co-op programs. The most common reasons offered by educators and employers there is the long history of practice. One coordinator explained that co-op is so ingrained in the culture because "they've had close to 100 years to practice," and says that the "community is used to the idea." There is a tremendous sense of history among employers, students, and educators, and this history tends to perpetuate co-op programs as former co-op students continue the programs. For example, the human resources representative of one company, who had been there for 21 years, said that co-op was prevalent in his company even when he started, and there was a history of employees who started at the company as co-ops:

> We have some employees, as I understand it, who started as co-ops who are still here. My understanding is that we have been in it from the beginning of time, since the program actually initiated. We were one of the first companies to be involved.

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9 If individuals work for about 40 years, and there is a rectangular distribution of years in the labor force, then 2.5 percent of a labor force will be new hires each year. With an expanding labor force the fraction of new hires will be somewhat higher, though in practice there has been expansion and contraction at different periods in the past and the proportion of new hires surely a great deal.

10 The recent survey by Bragg, Hamm, and Trinkle (1995) of work-based learning surveyed community colleges. The data were incomplete, both because of a response rate of about 50 percent and because only 75 percent of those responding provided enrollment figures. This latter group reported that 17.6 percent of students in occupational education were in work-based learning — a figure that seems high, perhaps because of an expansive definition of work-based learning. In contrast, the National Assessment of Vocational Education found that, while 69 percent of two-year colleges have co-op programs, only 2 percent of their students are enrolled in them. Neither of these sources represents a survey of *communities* and the prevalence of co-op education within well-defined labor markets.

11 Since coming across the co-op programs in Cincinnati in 1992, we have been searching for other communities where co-op is prevalent, and no one has been able to challenge our claim that co-op is more prevalent in Cincinnati than any other community. The only other community college where co-op is mandatory is LaGuardia Community College in Queens, but other educational institutions in that area do not have extensive co-op programs.

> We had someone retire, about five years ago, he was the vice president of engineering, and he started here as a co-op.

At another company, it was estimated that one-quarter of the 1,000 employees started as co-ops; at still another, three senior vice presidents had started as co-op students, indicating that the experience was common at high levels. These examples of deeply-entrenched history were repeated by many companies.

The result of the history and prevalence of co-ops is that even new firms start to use them quickly. For example, one of the smaller companies, founded about ten years ago, incorporated the use of co-op workers almost from the outset: "The company started in 1983 and virtually since we started up we've been using co-ops to support our manufacturing and engineering areas." And even firms that have been forced by economic circumstances to give up co-ops hope to return to them, and to return to the practice of hiring their co-op students upon their graduation.

Other reasons for the extent of co-op must remain more speculative:

• One is the relatively robust economy of Cincinnati, which has diversified in the past few decades from its base in manufacturing; this has meant that the region has suffered less from the decline of manufacturing in the past two decades, at least compared to many cities of the Rustbelt.[12]

• Employment in the Cincinnati region is less cyclically sensitive than employment in other cities, again because of its diversification from manufacturing; cyclical variation in employment makes it difficult to continue co-op programs because they are likely to find placements impossible during recessions.

• Another possibility, mentioned by several employers, is that Cincinnati's German heritage — with its relatively greater emphasis on collective responsibility — explains the persistence of co-op, particularly in the approach we describe below as "growing-your-own" employees where employers take considerable responsibility for the education of their co-op students.

• Finally, the quality of the co-op program — analyzed in Section III — is almost surely responsible for its persistence. It appears that the early programs were of high quality, and both employers and education providers have made every effort to maintain this quality.

In the end, however, the prevalence of co-operative education in Cincinnati remains something of a mystery. For other communities, the implication is that developing a

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[12] Indeed, we first chose Cincinnati to study after searching for a city where manufacturing was important but where unemployment was relatively low during the 1990-92 recession.

culture in which co-op can flourish will require considerable effort in promoting the nature and the benefits of work-based learning — a kind of promotion that is no longer necessary in Cincinnati because of the longevity of co-op there.

II. Incentives for Participation in Co-op Education

Although the lack of good data makes it impossible to quantify the benefits of co-operative education, educators and employers in Cincinnati are virtually unanimous in their support for the benefits of co-op — for employers, for students, and for the relationships between colleges and employers.

Benefits for Employers

For employers, one principal benefit is the ability to "grow their own" employees — to generate training programs that provide precisely the mix of cognitive, personal, and job-specific skills that they require. Others stressed that co-op placements make excellent screening mechanisms, because they allow employers to see the range of capacities — including personal attributes like initiative, the ability to work in groups, and discipline — that are poorly measured except by direct observation on the job. In the words of the employers:

> It avoids the hiring mistakes for us because you know you've got two years and you really do know an awful lot about the student. The student knows about us and it's so costly to make hiring mistakes. So we feel that is one of the major benefits. I did a small study— there is a greater retention rate of the former co-op versus a new hire... And so we only hire our co-ops and I can see the difference, just outstanding young people. It also gives us the competitive edge in recruiting — that we identify these people early on, especially minorities and females. We're going to identify them in their freshmen, early sophomore year and not wait. They're not going to be there [interviewing] when they're seniors and companies are recruiting on campus.

> It's an opportunity to grow new people into the business. I see that as probably the biggest benefit.

> We tell co-op students we're not hiring you because we're nice people and we're good corporate citizens and all of that. We're hiring you because we want people coming out of this program to become future employees. And we want work done in the interim. They come in and they do productive work. They earn their work. And the biggest thing is that it's a tremendous, tremendous recruiting tool and it's probably the best that you've got because you're not going on well I think they'll be a hard worker or I think they'll be able to learn and adjust. You know, because

> they've been there. As long as the experiences that they get as a co-op are close enough to what they're going to be doing. So my dream is never to have to hire anybody anymore. My dream is to go out and help the schools recruit students so they can put them in our co-op program and when they get out we hire them full-time. That's a dream definitely. But that's exactly what I would like to see happen.

Another representative said that her company relies heavily on hiring co-ops because it is impossible to learn skills specific to their company in school.

> For us it's ideal. We manufacture conveyors. An engineering student coming out of a two or four year degree program is not going to be exposed to how conveyors work or how to design conveyors. Even an engineer with many years of experience, (can't just jump in to a job)... We bring a student in and we put them to real work. I've had people with associates degree come right out and they are design level engineers, sharp and ready to role and yes, we'd automatically love to have them, to extend an offer and hire them in full -time. And most of the time, we do hire the people... I have one manager who one of his greatest concentrations is developing these students so that in the long run we've got a good end employee who is real strong in the conveyor business, who understands it too, and is going to be somebody of benefit to us.

Another benefit stated by many employers is co-op students as a source of cost-effective labor, a perspective considerably different from the longer-run perspective of employers trying to "grow their own" employees for the long run. As employers stated:

> Well, first of all it's cost effective and it truly is. People don't realize that. They don't necessarily have to come work with us. It's still cost effective because the work and the skill level that's being applied.
>
> In fact for us, and I guess this is a rather crude way of putting it, it's an inexpensive way for us to get very good help. If we had to hire from the outside . . . it costs three times the amount to subcontract.

Another employer commented on the benefit of having a cyclical employee:

> For us, it is a very cost effective way, plus if they keep coming back, we already have knowledge invested in this person.

Employers often remarked that hiring students for short-term work was more beneficial than hiring someone off the street. With a student, they knew there was a commitment to learn and to continue in that field. Numerous employers also mentioned the added benefit of having young, enthusiastic workers around:

> The youthful ideas, I think, are neat for us. They show a lot of initiative and a lot of creativity... Our people get an extreme benefit from showing someone their trade and how to do it. And you get people who want to work.
>
> There is a component in the business of having youth involved that brings a vitality to the organization. And some of it is stupid, blind enthusiasm; it's nice to be around once in a while.

Benefits for Students

For students, the benefits include gaining direct knowledge about the workplace and the applications of school-based learning in the workplace. Co-op placements also help students learn about what kinds of occupations they like and dislike, and — because a large number of employers hire their co-op students — they provide a mechanism of direct entry into the labor market. And of course, the earnings from co-op placements help many students remain in school.

There was considerable agreement that gaining skills and becoming familiar with work was the most valuable benefit of co-op. Students, employers, and education coordinators agreed as well that it is useful for students to get out of their school environments in order to put their learning in context:

> It's something other than sitting in a classroom or even in a lab, it's the real world. You drew it, you just put it together and it still doesn't work. But we're on a deadline, we've got to have this done because we've got a customer that's screaming for it, you know. So here is the real world.
>
> Students seem to appreciate their programs more when they go back into the classroom; they understand things more.

The argument that co-op is a valuable pedagogy in its own right emerged again and again. As one of the co-op coordinators expressed his college's philosophy:

> Number one, we think that cooperative education is a superior form of education in that it not only teaches students about the theory of vocational or what they're studying, but it also teaches them the practical application of that. Therefore, they can apply the theory that they're learning in the classroom in their minds a lot more clearly. They understand why they're studying structures or why they're studying a subject because they've seen how it's used in industry.
>
> They'll know what they want to do when they get out. They'll know whether they want to go to graduate school if that is what's required to do what they want to do. Whereas a student who doesn't co-op has absolutely no idea how they're going to apply their education.

Employers also emphasized that students benefit from the real-world experience of co-op:

> Well, they get to apply what they've learned in college. They get to grow up. It's experience and everybody says it's experience they get in the real world because there is just no match for it. And when the time comes to graduate, I think they're going to know what they want to do. And if they didn't co-op, they wouldn't. And they get a chance to have happy times, disappointing times, frustrating times, and that's just a part of working.

For many students, co-op is the most successful job search strategy. As one employer stated it:

> After they graduate, most of the time they have a job already there and they don't have to do anything.

At the companies we interviewed, with the exception of one with a general hiring freeze, between 60 to 90 percent of the co-ops from two-year colleges are offered full-time employment upon graduation. Even if students don't get a job with the firm for which they co-oped, the experience working is valuable to their efforts to find other work — particularly given the importance of experience as a job qualification in the sub-baccalaureate labor market. As one co-op coordinator declared,

> Another strong reason [for co-op] is it will enhance your resume... A co-op student, even if they do entry level work, can say "I went to work in a company just like yours. I went at seven thirty in the morning and I left at five o'clock in the afternoon. I did the bookkeeping or I did the computer work or I did the chef work. I saw what the other people in the organization have done... Now the employer is going to be able to look at that student and say, "he may not know exactly what my company is about, but he or she knows what it takes to get the job done"... So instead of getting just theoretical work that a student gets in a classroom, and some lab work that a student gets in a classroom, they have some practical experience. So instead of just opening the door of opportunity a little bit, you open it much further. And we've seen associate students win over baccalaureate students because they have the practical experience that the baccalaureate student doesn't have.

At a level in the education system where guidance and counseling is often inadequate, the co-op programs in Cincinnati provide information about work, in an experienced-based form that makes it all the more real, that provides students a better sense of the world of work and the nature of jobs available.

Many students in co-op programs are able to complete college without accumulating enormous debt. The colleges are proud of this fact, and use it to recruit students who might not otherwise be able to finance their education. One coordinator reemphasized this point:

> They [students] are given a tremendous opportunity to pay for their education. We think for a student, if they could get a loan for the first year, the chances of them being able to pay off the rest of their education through cooperative education is excellent... They normally can save enough money for college. Many save enough money for both college and living expenses.
>
> You get paid to do it. If you're a co-op student and you're smart enough not to go out and buy a brand new automobile or a new apartment or new clothes or whatever, if you're smart enough to take that check you get every two weeks and reinvest it in your education, when you graduate from CTC or you graduate from whatever institution, you don't have that big bill. So when you start getting more dollars than six, seven, eight, nine dollars an hour, you get to invest it in the new car or the new apartment. And I think that's a real plus for a young student not to have to face those bills when they're done.

The benefits of co-op are especially powerful given some special characteristics of sub-baccalaureate labor markets in which community colleges operate (Grubb, Dickinson, Giordano, and Kaplan, 1992). This segment of the labor market is quite local — so that local employment related to a student's field of study is crucial to realizing economic benefits. Co-op education strengthens the relationships between colleges and employers and leads directly to higher placement rates, partly addressing the problems that arise in other local labor markets where educational institutions and employers are distant from one another. In addition, hiring in the sub-baccalaureate labor market usually requires experience — which is a good indicator of job-specific skills and certain personal capacities — making it difficult for students without experience to break into employment. Since co-op programs provide experience and allow employers to judge the competence of their co-op students directly, they facilitate entry into sub-baccalaureate employment.

Benefits to Educational Institutions

For the colleges involved, the principal benefit of co-op education is that it strengthens their institutional links to employers. In contrast to three other local labor markets, where employers were relatively unfamiliar with and indifferent to the local community colleges, employers in Cincinnati are quite familiar with the variety of educational providers and generally supportive of education (Grubb, Dickinson, Giordano,

and Kaplan, 1992). Colleges also benefit from having what they consider to be higher-quality education, guided by the participation of employers and complemented by work-based placements, and they also enjoy higher placement rates for their graduates than would be true in the absence of co-op education.

A very real benefit to the educational institutions is that co-op contributes greatly to students' learning. This was clearly stated by all of the coordinators and employers interviewed. As the co-op director at one of the colleges stated:

> My school believes in this type of education enough that I don't think they would let cooperative education die. I think they believe in it as a methodology of education. Maybe as much or more than any school in the nation. Most schools around the nation, co-op is probably the first thing to die. And I don't think that's right. I think that they have a much better chance of industry/business relationships with colleges and universities. Not only for curriculum and what should be offered in the curriculum but more funding. Almost every foundation that I've been able to get money from is somehow connected with a business person. A business person is making the decision about who gets that money from that foundation... So those kinds of relationships I think are extremely important and I don't see how colleges and universities can do without them. And I think co-op really enhances that.

The two-year colleges claimed very high placement rates for their graduates, which they attributed to the co-op program. One of the employers felt the schools' recruitment efforts are enhanced by the existence of co-op:

> They are able to recruit students who understand that they'll get a job at the end of their college experience versus how many college students are out there, particularly when the economy is like it is right now, how many are out there flipping hamburgers or whatever it takes.

The development of partnerships was mentioned by employers and college representatives as being an important benefit of co-op programs. An employer representative who has worked with co-ops for over twenty years stated firmly:

> Well, if it hasn't been too obvious, I guess it's from my own personal standpoint, I think it's [co-op] the greatest thing since sliced bread. My only hesitation or concern or fear was that I didn't do it when I was in school and that's a disappointment. Any time I talk to family members of employees or something like that I always encourage that type of thing and I've given talks on behalf of some of the universities promoting it. But the key thing and I think it's come through, but the key thing is the developing of the partnerships. It's just like a relationship with a physician. If you only go once every twelve years, you may not know the history and how things are developed and you may want to start out with the physical and

> different things like that. But we strive for developing partnerships. And partnerships means, you need some help, call us, we'll see what we can do. We need some help, we'll call you types of things. It just really works well and what we found is that the universities like to take advantage of us and we have no problem with that because usually the things they want to take advantage of us is benefiting us as an organization. So there are partnerships.

The schools agreed:

> It keeps us in touch with industry. We have six people here on the payroll not counting me that spend all their time out in industry. We knew when (company) was about to downsize because of what we heard on the streets and what we heard sitting in people's offices.

An employer stated additional benefits to the educational institutions of their relationship:

> Well, they have an opportunity, with us anyway to get more involved and find out what we're doing. In the middle of August we have a team coming down to (one of the plants) to meet with our supervisors... The deans are coming and they get to sit there with the supervisors and say you know, "what should we be doing?" This is what we need. So more interaction. Also they're going to learn some state of the art technology

There are also benefits associated with keeping instructors current in the field through their contacts with employers. As one company representative stated:

> To the colleges, I think the number one [benefit] is that they can come into the company and see what we are doing and they can keep up with it. And keep their college at the leading edge of the universities in the selection that the students make as to where they want to pursue an education. I think too the professors, it has helped them. I've dealt with co-ops for seven years so this isn't new to me. But I think the professors, just from my experience, tend to not be as realistic as to what the real world is all about. When I went to school and graduated from my undergraduate degree, they filled my head with, you'll get this wonderful job. They fill the students with ideas that are not true and that don't happen. And I think this has given them, from the students I see today, they are more realistic than I was. I think the professors have come down a little bit off of their, those that are involved in the co-op program, off of their idealistic pedestal if you will. I think that's a definite plus.

There are, then, distinct benefits of co-op to all participants — to students, to employers, and to the educational institutions involved. These are, of course, the benefits that promoters of cooperative education and work-based learning have been touting for years; there's nothing special about these claims. But what is different in Cincinnati is that

these benefits have become so widely accepted that there is no need to persuade employers because they have enough direct experience, over long enough periods of time. The value of co-op education is by now embedded in the culture of employers and educational institutions alike — in a way that is not true of regions where work-based learning is still uncommon.

III. The Quality of Co-op Programs

One of the current concerns in debates over school-to-work programs is whether work placements will be of sufficiently high quality to provide real education to students — or whether they will become low-quality placements in which students are performing routine and unskilled labor, as many work experience programs have become. In Cincinnati, the issue of quality proves to be high on the list of concerns, and there are distinct steps that both employers and educational institutions take to ensure relatively high quality. From these efforts a "high-quality equilibrium" has developed in which both employers and education providers are aware that they need to provide high-quality work experiences, on the one hand, and well-prepared students, on the other, in order to assure that the expectations of all participants are met. What is especially interesting about this high-quality equilibrium is that it seems to be maintained without any regulatory mechanisms — without formal contracts, or skill standards, or a local organization regulating co-ops. Indeed, the Cincinnati programs appear to be a distinctly American form of work-based education, without the extensive regulation that characterizes German practices.

However, both employers and education providers have screening mechanisms to assure the quality of co-op programs, no matter whether they follow the "alternating" or the "parallel" arrangement. :

Employer Selection

At a few of the larger firms, initial contacts, screening, and sometimes hiring is done through a human resources department. At smaller firms, managers often screen applicants, whose resumes are sent by co-op coordinators, and then conduct an interview. While some of the firms treat co-ops as a special group of employees, in many instances the hiring arrangements are almost identical to those used for permanent employees.

The employers choose to work with colleges based on the nature of their programs, and most employers seem to know the curricula fairly well. For example, one company said they choose students from different colleges (both two- and four-year colleges)

depending on the program and the direction they want the co-op student to take; some firms chose students from vocational Associate degree programs (rather than transfer-oriented programs) because they did not want to lose them to baccalaureate programs in a few years.

Employers also prefer students who are local and planned to stay in the area. The perception at some companies is that two-year college students are more stable in this respect. Some companies hire two-and four-year students interchangeably, while others match their needs for short-term and long-term work. According to the personnel director at a manufacturing plant, they choose the student who matches the type of job that they think they'll fill in the future:

> With electrical engineering our thinking is that we want the baccalaureate education because of the need for more theory in what we do. The mechanical engineering, a lot of our needs, associate education is just plenty... So we choose it as much as anything based upon what we think three to five years from now are the types of educated persons that we need in those positions.

In another pattern, co-op students are selected by the coordinator at the school. While the personnel representative of the employer has final say on the hire, they defer to the coordinator to place an appropriate student with them. One employer representative emphasized the importance of having a good working relationship with the school:

> [The coordinator] doesn't send us anybody that she doesn't feel would work out. She's been in the position long enough to know what our understood requirements are, so to speak.

However, another employer commented on having to be careful about the coordinators' helpfulness because of the colleges' goal of placing all students:

> You know some of them do a pretty thorough job, sometimes they don't at all. And between the institutions, the counselors and the coordinators are all different. At [one particular college], we've got one coordinator, who says "take a look at her, take a look at him, you'll really like them." You've got others who push like crazy people they have trouble placing. And if you listen to them you pick up the people that are hard to place because it is their good feeling inside that they're going to do a wonderful thing and place somebody who is struggling with school and struggling with everything else. So you have to look at the individual coordinator to know whether they're helping you or getting a 100 percent placement, and you can usually judge from that.

Even where employers select their own students, they may still rely on college coordinators to help in the selection process by screening out inappropriate students. For

example, the co-op representative at a large company with considerable history in co-op admitted:

> Another thing that I think that helps us with the interviewing process is that the schools are very good to screen out. They're not going to send me someone that they know [our company's] high standards are not going to be interested in. When I call and I say I have an opening, sometimes I will send them a summary. And one of the first things they'll say is "what is your GPA requirement? What are the skills? Do they have to have experience or can they have worked at McDonald's and this be the first job?" Will the curriculum, in other words, satisfy the needs of the job or do they have to have a previous co-op experience? So that helps, that thoroughness helps.

One of the smaller companies tends to rely heavily on the relationship with the college co-op coordinator to not only screen applicants, but to find the right match for them as well:

> We develop relationships with most of those people so they understand what our needs are and what kind of person succeeds with us and what kind of person doesn't. So they keep an eye on new people coming in, or people coming back from a job that isn't going to be available next term and they'll send us a little blurb about what kind of person they are. Then we'll interview them. And if the chemistry looks right, then typically make an offer... Generally we work with [a particular local college] and primarily I guess, like anything else in our business, it's people oriented. We've got a good contact in [the co-op coordinator], who's the coordinator over there, and that relationship has just worked so well that we tend to rely on him for most of our technical coops in the assembly area.

At one of the companies that hires over 100 co-ops per term, selection of students is a year-round effort. While most of their co-ops are baccalaureate students, the process for selecting associate degree students is equally challenging. As the recruiter stated:

> Most people think the recruiting or getting a co-op is just showing up on the college campuses, and that's not how it is done. I'll spend the majority of my time traveling, involvement, working with the college or university, so that by the time I'm ready to recruit, the right students sign up on my schedule. So for example, I was at Cincinnati Monday, I'll be at Georgia Tech tomorrow. It is not open sign up per se, but the faculty and the co-op administrators determine my schedule. Or the students come in and say I want to talk with (company). So mostly, I have six key schools that I recruit at and the other ones are on a referral basis. And I do that because I think you only have the time to give to a select number of schools.

This same company chooses educational institutions based on the school's interest in them as well as proximity to one of their eleven locations. A "well disciplined" co-op

program at the college is much easier to work with, and therefore they will go to extra efforts to recruit students there. Elements of a disciplined program include rules, requirements, and structure. For this firm, the availability of classes is critical to the success of a co-op program so that students can rotate terms working and attending classes. The high enrollment of women and minorities is also important, since this firm uses co-op in part as a way to recruit qualified women and minority workers.

Firms have different requirements for co-oping, including term limits. At two companies, students are required to spend at least two quarters with them due to the high cost of training and supervision in the first term. Some employers might also have more specific curriculum requirements, such as the ability to read blueprints, having a certain level of math proficiency, or experience on certain machines.

In general, then, the selection process is a joint one: employers clearly have the final say, but many of them — even the large ones with their own personnel departments — rely heavily on the colleges to select the students that are appropriate for them. This may, of course, place the education providers in a difficult bind: on the one hand they want to educate all their students and place every potential co-op, and on the other hand they need to be selective about the students they recommend to employers. But whatever the discomfort involved with selection, it adds another kind of screening to the process, adding to the "high-quality equilibrium" established in Cincinnati.

We were unable to ascertain anything about one possible dimension of selecting students: whether there are any patterns of discrimination against minority students, or against women in non-traditional occupations. This has been a source of concern for proponents of school-to-work programs too, because of the possibility that discrimination in employment — particularly against black males and women in certain "non-traditional" positions — might affect school-to-work programs as well. However, we were able to learn almost nothing about such possibilities: employers are extremely close-mouthed about their racial and gender-based hiring practices,[13] and co-op coordinators were no more informative. It is tempting to conclude that companies using co-ops to "grow their own" employees would be unlikely to discriminate because their commitment to developing fledgling students is so strong — and because they know they will have the opportunity to observe students over a long period of time to weed out those whose performance is inadequate. In addition, several companies use co-op as a way of recruiting minorities and women, and they would be particularly unlikely to discriminate. One company, which

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[13] See also Grubb, Dickinson, Giordano, and Kaplan (1992).

relies solely on co-op as its campus recruiting mechanism for permanent hires, stated quite clearly its goals for diversifying their workforce:

> [Coop] gives us the competitive edge in recruiting in that we identify these people early on, especially minorities and females. We're going to identify them in their freshmen, early sophomore year and not wait. They're not going to be there as seniors to recruit on campus. See, I don't believe that companies can do the traditional way of recruiting anymore. You just cannot go show up on college campuses and get the best and the brightest. I believe they're out there in co-op. But you need that early identification.

However, confirming our hunch that firms in the co-op program are unlikely to discriminate would require considerably better data than we were able to obtain.

Selection Mechanisms in Educational Institutions

Because colleges in the Cincinnati area vary in their selectivity and in their requirement for co-op, the college requirements before students can take co-op vary as well. OCAS probably has the most requirements given its competitive admissions criteria. The two major programs at the college, engineering technology and construction management, require certain levels of high school math and science, as well as particular scores on standard college admissions tests in order to be admitted to the two or four year programs. If a student does not meet the requirements, he or she is able to take preparatory courses until admitted to the program. In addition, the college offers a summer bridge program for students who need an additional math or science course. In addition, students are not placed in co-op programs until their third term, so that the college has a chance to evaluate — and remediate if necessary — any academic deficiencies a students may have entered with.

In order to enter a co-op program at CTC, a student must maintain a 2.0 grade point average, attend full-time, and be "on track with the proper sequence." The students enrolled who are not enrolled in co-op are generally taking "pre-tech" courses or are attending part-time. All new students take an "Asset Examination" that tests their abilities in basic math and English; students who are weak in a particular area then start in the pre-tech program. (If interested, they can be admitted directly into a occupationally-specific pre-tech program, such as pre-engineering technology.) A pre-tech counselor works with the student to plan the course load; upon completion of the remedial work, the student transfers to the major and is eligible for co-op.

Because CTC (unlike OCAS) is an open-admissions college, planning for co-op jobs is particularly challenging for the coordinators because they never know how many of the entering students will pass the Asset Exam or the pre-tech courses and be eligible for co-op. As one coordinator explained:

> Because of our open door policy, we cannot estimate how many students are going to come in a term asking for placement. At the beginning of each term we have a co-op orientation, put signs around, notify everybody. Any new student comes to orientation, they show up. Some orientations we might have 200, you know in the fall and then of course in the spring and summer it's smaller. We tell the students all the procedures. We give them deadlines for turning in their resumes. And there's also a form that their chairperson has to send in to say that they're eligible for coop. And once they're eligible and turn in their resume then they're a case. Students are assigned to coordinators by program. Each coordinator has some programs.

OCAS and CTC, the two colleges where students are more likely to alternate school and work, offer only vocational programs, and so they attract students who intend to prepare for employment. At both institutions, however, students must be enrolled in *programs*, not just a series of unrelated courses, in order to participate in work-based experience programs. This practice effectively eliminates the students, so common in many community colleges, who are unsure of their purposes or uncommitted to postsecondary education.

Sinclair is also an open admission college, and participation in co-op is optional. The strongest co-op programs are in the business technology area, which includes accounting, aviation, travel, and computer fields. There are also a number of students from the engineering programs who co-op. Selection of students for participation is somewhat different at this college. The central co-op office does a fair amount of marketing on campus about their services, and has enlisted faculty in certain programs to encourage students as well. In order to enter a co-op, a student must maintain a 2.0 grade point average; have completed at least 12 credits; be working to obtain an associate degree or certificate in an academic program; and complete the introductory co-op/career planning course. There are no part-time or full-time requirements, as most students co-op while enrolled in courses.

In all three institutions, then, there are screening mechanisms to ensure that students entering co-op programs are relatively committed, and that they have either eliminated any academic deficiencies or have maintained a minimum grade point average. These co-op programs are not for the casual students who are so numerous in community colleges, or for the "experimenters" who are casting about for an occupational area to enter, or for those with serious academic deficiencies. As we will clarify, these screening mechanism are crucial for the colleges to maintain their end of the "high-quality equilibrium" that characterizes the Cincinnati co-op programs. In the process, of course, students without the necessary requirements are screened out, and these may include low-income students

who have done poorly in high school, or women and minority students who have not taken the required math at OCAS and CTC.[14] But every college has some remedial efforts in place — preparatory courses and the summer bridge program at OCAS, pre-tech courses at CTC, developmental courses at Sinclair — making it possible for students committed to these programs to enter them even if they lack the prerequisites.

The High-Quality Equilibrium

An interesting and unexpected finding was the existence of unspoken agreements between the employers and the education providers that each will provide a contribution to co-op education of high-quality: that companies will get well-prepared, hard-working students, and that co-op students will have access to real learning situations on the job. In essence, there is a "high quality equilibrium" in which each party's expectations of the other is being met — and a recognition that if either side neglects this agreement and allows quality to slide, the other would follow. For example, if the quality of jobs decreased — if students were doing fairly menial tasks — fewer able students would go into those programs that require co-op; if the quality of students dropped, employers would seek other means for meeting their labor needs. While the high-quality equilibrium is unstated, both employers and educators are conscious of it. For example, employers were adamant that they hire co-op students because they get high quality work out of them. As one employer said,

> We just don't take what isn't a good student. So I guess through years of experience of working with us they [the college] know that we're not going to take a warm body, that we'd do without.

Another individual acknowledged that she has seen companies use co-ops to do low-level work, but to the detriment of the program. Her previous firm used co-op students to make copies of blue prints, rather than learn to draw them; as a result, the quality of student decreased. When she was promoted and tried to improve the program, it took some convincing to get good students back.

Another employer attributed the high quality equilibrium to both the students and the college program itself:

> It's the quality of the students coming out and it's also the quality of the co-op program at that college, it really is. Many of the reasons you're asking, "why do I select the universities I do", it's the same reason for saying no. Oh yes, we might try some schools here and there, different ones, and we

[14] As part of the general lack of data, we were unable to obtain any information about such effects.

> might have a student, and the student is very good and the co-op program is very bad, but they were referred for a reason. The students are good and we won't say well just no, because the program is not any good. I'm not saying that they're not good it's just that perhaps they don't have the support, the money to make the program work.

Indeed, once the high-quality equilibrium is established, it creates its own incentives for each side to maintain quality; otherwise students will not enroll and employers will not provide jobs. A co-op administrator described the incentives for employers to offer decent jobs:

> I inform [employers] if they have a low campus image and nobody wants to interview with their company—because students bring this back, too, you know. There's nothing that can kill a program quicker than students coming back and complaining about their co-op job, so the students really talk to one another about these things—how much they make, what they're doing, and so forth. I mean, there's a lot of buzz on campus about different businesses and where the "good" jobs are. So employers need to know that.

At the same time, the educational institutions have to be sure to send students appropriate for the kind of work involved, rather than "clunkers":

> If [employers] got clunkers every time, if they got somebody who couldn't do the job or learn the job—they would, of course, generally be able to deal with that on a once a year basis [but they wouldn't put up with it often]. If a coordinator doesn't screen an applicant sufficiently for the job—I mean, if you put a student out on a job, for example, in drafting or in CAD, and the student hates offices and wants to be in a factory or outside—that is not [going to work well]. So there's a certain amount of common sense to make sure that the situation works right.

These co-op programs therefore screen both students and jobs so that able students are matched with promising jobs and so both students and employers have sufficient information and there is an appropriate match.

The high-quality equilibrium in Cincinnati is almost surely a factor in the popularity and longevity of co-op education. Elsewhere in the education and training system, various "low quality equilibria" have evolved, in which jobs of low quality, pay, and status are matched with students or clients with few skills, little education, and insubstantial experience — in the work experience programs that proliferated in high schools during the 1970s; in the job training programs funded by the Job Training Partnership Act (JTPA) and by welfare-to-work programs; and in the Department of Labor's Employment Service. These are low-status, marginal programs that — whatever benefits they may generate for individuals in them — would never be promoted among employers in the ways that the

Cincinnati co-op programs are. The obvious implication is that school-to-work programs also need to establish mechanisms to ensure a high-quality equilibrium.

The Informality of Co-op Programs

Although Americans — with their attachment to *laissez faire* approaches and unregulated markets — dislike excessive rules and regulations, the efforts to fund programs of high quality very often incorporate practices intended to enforce provisions related to quality. For example, the General Accounting Office concluded in a 1991 report on cooperative education at the secondary level that high-quality cooperative education programs share several regulatory features: training plans agreed to by employers, students, and schools detailing both general employability and specific occupational skills that the students are expected to acquire; adherence to training agreements outlining the responsibilities of students, schools and employers; and close supervision of high school students by school staff, such as monthly worksite visits (GAO, 1991). In the current enthusiasm over apprenticeship-like programs and school-to-work efforts, many advocates have proposed developed skill standards that students must meet, certified with portable "certificates of mastery" modeled on the German system.

However, what is surprising about the Cincinnati programs is that they have persisted without any obvious bureaucratic mechanism to keep them going. There is no central clearinghouse, or Chamber of Commerce office, or state-funded bureau in charge of co-ops; there are no formal contracts between employers and educational institutions, contrary to virtually every recommendation for work-based learning. The lack of any visible form of institutionalization was one of the most surprising aspects of Cincinnati; we asked persistently about mechanisms of institutional or bureaucratic control at a level larger than any one college or company, but were unable to find any. Instead, their persistence seems to be due to four interrelated factors:

- First, the state of Ohio supports co-op through its regular program of state aid to community colleges, since students during their work placements are still counted as enrolled. This steady financial support — obtained through regular funding channels, not through special-purpose state or federal grants that are subject to the whims of funding cycles and appropriations, as federal school-to-work funds will be — has been crucial to the stability of co-op programs, and it is clear that the cessation of state funding would end these programs as well.

• Second, the co-op coordinators in community colleges, funded through state aid, are absolutely crucial in every way:[15] they recruit employers, maintain as much continuity as possible over time, screen students, establish links with faculty, promote co-ops within their own institutions, and generally provide the institutional maintenance or "glue" that holds co-op programs together.[16]

• Third, within educational institutions the fact that co-ops are required (in OCAS and CTC) and widespread (in Sinclair, where co-ops are largely voluntary) means that they are accepted among students as routine; even better, students have come to understand the additional benefits of work-based education, so that there is little need to recruit reluctant students.[17]

• Finally, the support of the employer community seems to rely on the history of co-op — since many managers and workers were themselves co-op students — and general acceptance of the benefits of co-ops, a culture which is spread around employers quite informally.

For those individuals (like us) who expect to see innovative practices institutionalized through bureaucratic authority and enforcement mechanisms like skill standards, the lack of such practices in Cincinnati is a genuine puzzle. However, a different interpretation is that — in sharp contrast to the common German practice, which is to wrap all practices in layers of bureaucratic mandates and institutional requirements — one might interpret the Cincinnati experience as a particularly American form of work-based education, embedded in voluntary relationships without rules and regulations.[18] The implications for fledgling school-to-work programs are not especially clear, unfortunately, since innovations almost surely require more support than do on-going practices, and the efforts to develop high-quality school-to-work programs may require some external pressures to prevent low-quality programs from developing. But the Cincinnati experience

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[15] While it is difficult to compared the resources devoted to the co-op programs, OCAS has 2 coordinators for about 100 students each semester; CTC has 11 coordinators for about 531 students per term; and Sinclair has 4 coordinators for 225 students per term. Therefore a ratio of 50 students in co-op at any one time per co-op coordinator is common in these institutions, though the varying nature of co-op programs may make the workload vary substantially.

[16] There are several co-operative education associations, including one for the state of Ohio, to which many co-op coordinators belong and which provide them a forum to discuss regional issues and share practices. However, these groups have no regulatory powers, and therefore cannot act as a unifying organization.

[17] A possible exception may be developing at CTC, where its transformation into a comprehensive community college has brought in a new group of transfer-oriented students — still relatively small in numbers — who are unconvinced of the value of co-op. See the discussion in the concluding section.

[18] Indeed, it may be that even the rule-bound German system is more dependent on unstated cultural norms than most of us realize. As David Finegold (1993, p. 5) concluded about the German model, "It is not possible to transplant this system -- which evolved from the medieval craft guilds, and thus grounded in a long tradition of respect and reward for skilled, manual careers -- without the deep structural and cultural roots that support it."

clarifies, we think, that an informal culture of expectations around work-based learning may be more powerful in the long run than a complex set of regulations and bureaucratic requirements, which are likely to be resisted by the American preference for *laissez faire*.

IV. The Effects of Co-op

Assessment issues in cooperative education are both important and often overlooked.[19] Evaluation includes examining the effectiveness of overall programs, as well as studying the effect of these programs and experiences on the development of the student/worker. In Cincinnati co-op programs, very little data are collected by educational institutions or employers that would be useful in assessing the larger questions concerning cooperative education — a practice consistent with the general lack of information collected by employers about their own training efforts. Rather, the information that colleges or employers collect tend to focus on short term issues such as how many students are placed per term and how many employers are involved. We are therefore unable to say anything about the effectiveness of the Cincinnati co-op programs based on data reflecting long-run earnings, employment, or other measures of success.

To be sure, there are procedures in place for evaluating co-op programs, but these "evaluations" do not describe effects on knowledge or subsequent employment. Typically, employers complete evaluation forms provided by the educational institution concerning individual students. At some companies, an in-house evaluation was conducted in addition to the one the school requires. The college representative uses these evaluations to assign the student credit for their co-op term, and in some cases to assign a grade. Employers often use the evaluation to determine if they should ask the student back for another work term. However, while these evaluations may indicate whether the co-op placement is successful in the sense of operating smoothly, they obviously do not provide any information about other measures of success.

Many employers and co-op coordinators expressed an interest in additional evaluation and data collection, yet resources of time and money have precluded them from

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[19] After rapid expansion of cooperative education, questions of effectiveness, relevance, and overall definition came to the forefront. Some of these pressing questions were asked in the 1978 monograph, *Developing and Expanding Cooperative Education*, including: What is cooperative education really? How is a viable program of cooperative education designed and implemented? What are the functions and roles of a co-op coordinator? Under what conditions, if at all, is degree credit for co-op justified? How does co-op relate to other campus-based forms of non-traditional or experiential education? These questions were intended to drive program improvement efforts, and to inspire dialogue about cooperative education. However, there has been relatively little sophisticated evaluation of co-op programs.

developing better evaluations. One company found that having preliminary data from an evaluation saved their program when the firm went through dramatic changes:

> We should keep records. I mean you should, every five years or so evaluate the program and see where you are. But what happened, [our company] went through a rightsizing. Rightsizing is not getting rid of people, it's making sure you're doing the right things and doing them right. And we had to make presentations, and we did eliminate some of the activities where we felt we could be doing something else. When I made that presentation for all this, I wanted to give them statistics and the questions they were asking is "how many people have you hired in the last 10 years?" "What is the retention of those people?" We had all that in the data base, and you can just plug it in. And that was very important in keeping the program, that we had good data.

Like employers, the colleges tended not to have formal evaluation mechanisms in place. While basic statistics are kept regarding the number of students and employers involved each year, very little data is collected beyond that. There is certainly an interest in knowing more about their students' experience, as well as how to improve their programs, but resources are unavailable to answer those questions. The lack of adequate information about these co-op programs reflects the weak state of institutional research in community colleges generally.

In the absence of better data about the effects of programs, the only indication of effectiveness comes from expressions of satisfaction, particularly from employers. Very few employers expressed dissatisfaction with co-op arrangements; when they had a problem with a particular student, the college coordinator usually mediated a resolution. In the larger sense, however, employers are universally satisfied with co-op programs: the only reason ever given for discontinuing participation in co-op was the economic conditions that force downsizing, and even firms that have had to terminate the program in the past expressed interest in re-starting the program once employment conditions permit. By this measure of employer satisfaction, then, and by criterion of historical persistence, the co-op programs are highly effective.

In addition, a high percentage of students enrolled in co-op programs are offered permanent positions. As mentioned above, OCAS data indicate that about 93 percent of co-op graduates who want to do so find employment the first few weeks after graduation. (CTC and Sinclair Community College have no comparable data.) From the vantage of those doing the hiring, most employers claimed to hire between 60 and 90 percent of their co-op students. To be sure, these rates of hiring vary with business conditions, and fall during periods of high employment when new hires are fewer. But while comparative figures about placement rates in other co-op programs are difficult to obtain, these

placement figures seem high by any standards. These provide yet another indicator that the Cincinnati programs are effective.

While there are no data that permit any analysis of which kinds of co-op programs are most effective, our strong impression is that alternating co-op programs operated by employers with a "grow-you-own" philosophy are of higher quality than are parallel programs, more often operated by employers who view co-op as a source of well-trained, inexpensive labor. The alternating programs provide more intensive experiences; they more realistic in the sense that the hours and continuity of work are those of a regular employee; the concern of employers with providing a truly educational experience is stronger; and the motives of employers in "grow-your own" programs were more student-centered, and were concerned with the firm's well-being only in a very long-run sense. Employers in these alternative programs are also more likely to offer ancillary educational experiences — seminars and the like — and to rotate students through a series of positions, both of which enhance the educational content of placements.

From a research perspective, however, the lack of data on the consequences of Cincinnati's co-op programs remains disquieting. School-to-work programs will almost surely be more carefully evaluated, in keeping with the accountability movement now sweeping education (and government in general) in this country.[20] In the process it will be possible to determine whether the satisfaction that employers express with high-quality co-op programs are confirmed by more precise measures of employment consequences.

V. The Implications for School-to-Work Programs in the U.S.

In many ways, the unique case of Cincinnati confirms what the partisans of co-operative education — and the more recent advocates of school-to-work programs — have always claimed. While definitive data remain elusive, the reports of employers and educators alike confirm a variety of benefits to students, including a smoother transition between school and work; the ability to accumulate a variety of work-related skills that are different from and complementary to those one learns in school; and better information about the jobs available and their suitability (or unsuitability). The benefits to educational institutions, particularly in reducing the gulf that appears to exist in other local markets between employers and educational institutions, are substantial as well. And in Cincinnati the issue that bedevils many fledgling school-to-work programs — the problem of persuading employers about the value of providing work-based placements and getting to

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[20] Indeed, the Department of Education has recently circulated an RFP asking for a five-year evaluation of the early school-to-work programs.

offer sufficient places — simply doesn't exist. Employers are almost uniformly convinced about the value of co-op, particularly as a form of "growing your own" employees but also as a recruitment device and a source of productive, short-term labor.

However, the real value of examining co-op programs in Cincinnati is not to learn once again about the benefits of co-op and school-to-work programs, but to understand the special conditions that have contributed to an enduring and widespread set of programs in Cincinnati, as well the problems that remain despite the prevalence of co-op. Even if the conditions that have fostered co-op education in Cincinnati are unique, there are at least four implications from examining Cincinnati programs:

The support of employers

Employers in Cincinnati support co-op wholeheartedly, both in the sense of providing placements and other forms of financial help to colleges and in the moral support they provide for close working relationships with education providers. In a community where the value of work-based education has come to be understood, there is little need for repeatedly making the case and persuading employers of their duty to participate — since self-interest rather than duty is the principal incentive.

At the same time, two problems remain. One is that, roughly speaking, employers participate for either of two very different reasons. Those who are trying to "grow their own" employees, in a school-based and work-based education tailored to their particular requirements, are typically larger firms, able to rotate co-op students around different placements, and generous with supportive services like internal seminars so that students can learn about "all phases of the business"; they consistently articulate an educational motive — of wanting to educate students broadly and deeply. These programs also tend to use the alternating model, and are almost surely the best placements. But other firms — typically smaller, probably less profitable — view co-op as a source of relatively well-trained, well-screened (by the college) short-term labor;[21] in these cases students tend not to rotate among a number of placements, there tend to be fewer supportive services, and the firm rather than the student is the principal beneficiary. In these cases the dominant model is the parallel approach, one that can be very similar to much more informal work experience programs, or even casual afternoon employment. Co-op coordinators claim that

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[21] A difficult question that merits further examination is whether employers sometimes use co-op students as an alternative to permanent employees — much as they are now moving to temporary or contingent labor as a way of avoiding paying benefits and hiring and firing over the business cycle. In addition, there is some indication from a few Cincinnati employers that they sometimes hire co-op students in place of temporary workers. Given the problems associated with contingent work — including the unstable employment, the lack of promotion opportunities, and the poor benefits — any tendency to view co-op students as equivalent to temporary workers would be a poor practices, in our view.

there are benefits to both kinds of co-op programs, and the value of experience in the sub-baccalaureate labor market cannot be underestimated. However, the value to students of placements justified as productive labor is more questionable because the motives of employers are not clearly educational.[22] For school-to-work programs, it is important to recognize the division in motives and structure, and to encourage as much as possible the "grow your own" approach to work-based education.

In addition, finding enough co-op placements remains a struggle, even in Cincinnati. The difficulties in amassing enough placements for all students as the term approaches, in getting placements in small firms (which dominate some labor markets), and in finding placements in cyclical downturns when firms are laying off workers were cited by a number of co-op coordinators. Colleges have tried many tactics to avoid these problems, especially the attempt to develop "portfolios" of many employers of varying sizes and in different sectors so they are less vulnerable to cyclical declines in one sector, or the fortunes of a particular large company. But even in a community where work-based education has become widespread and where employers participate willingly, there is always excess demands for placements.

Support from the public sector

Those administering co-op programs consider certain kinds of public support critical to the maintenance of co-op programs. The most important, not surprisingly is the basic financing of the two-year colleges' participation in co-op. Current state support for co-op comes in the form of reimbursement for students even while on the job; that is, students are enrolled and the colleges continue to receive state funding, through the regular mechanisms of state aid to community colleges, for students on their work terms. These funds go into the colleges' general funds, though they tend to be used to support the additional costs associated with providing co-op — especially the costs of hiring co-op coordinators, as well as the marginal costs (in some cases) of having to offer courses more frequently to accommodate students on co-op schedules. The importance of this funding mechanism is that co-op programs have a stable funding base, rather than having to rely on grants, contributions from employers, or other special funds that can dry up. By implication, work-based learning elsewhere needs to have a stable source of funding to support the coordinators and other administrates who are central to keeping these programs running.

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[22] An obvious but difficult research task would be to ascertain the long-run employment benefits of these two types of co-op or school-to-work programs — assuming that the two could be differentiated in the first place.

While state fiscal support for co-op students in the Cincinnati area has been stable, a potential problem with funding exists because of the pressures internal to educational institutions. Particularly in a period when public support for higher education is declining, the competition within institutions for funding is growing more intense; and competition may generate more faculty pressure against co-op programs — which by definition support education outside the institution, rather than programs run by faculty. In institutions without long histories of co-op, this pressure is likely to be especially serious. One possible antidote to this problem would be to earmark certain state funds for co-op programs, rather than leaving them to local faculty (and administrator) decisions.

It is important to understand the nature of this potential source of resistance to co-op education. Schools and colleges in this country have developed as self-contained institutions, dominated by academic concerns — both in the sense that they reflect the dominant academic disciplines, and in the more pejorative sense that their content is generally divorced from the world of applications. Just as much of the teaching in conventional classrooms is decontextualized, most educational institutions are decontextualized too, since they are very little involved with employers, community agencies, or any other institutions outside the schools. The school-to-work legislation — like co-op education before it — is one effort to break down the isolation of schools and colleges, as is the related movement for service education in the community. But the effort to open up educational institutions runs counter to their basic structure. In particular, most faculty see their roles are tied to the institution and to the teaching of courses, and most faculty votes work against activities that do not take place in conventional courses. It may be unworkable, then, to rely on faculty decisions for the introduction and maintenance of non-course experiences alike co-op; some external mechanism, including reliable funding, may be necessary.

A second aspect of public support involves norms and status, rather than financial support. One special threat to co-op programs, which arose during our visits, illustrates both the importance and the fragility of cultural norms. The Board of Trustees of Cincinnati Technical College voted in August 1993 to become a comprehensive community college.[23] Some co-op coordinators at CTC fear that this "academic" emphasis might undermine co-op, as resources could be diverted to transfer centers, articulation

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[23] In postsecondary institutions there has been a constant process of "institutional drift" in which area vocational schools initially devoted to secondary students add postsecondary students, evolve into technical institutes offering certificate and Associate degrees, become and then become comprehensive community colleges by adding academic degrees. The most recent stage in this "drift" is the attempt by some community colleges to become baccalaureate-granting institutions by grafting another two years onto their programs. "Institutional drift" is testimony to the power of academic over vocational goals and of the baccalaureate degree over sub-baccalaureate credentials.

mechanisms, honors academic programs, and other transfer-oriented practices, and as the purpose of preparing for substantial employment may come to be displaced by the goal of entering a four-year college and getting a baccalaureate degree. Already, a difference between "traditional" students and the "new" students seeking to transfer has emerged: transfer-oriented students see co-op as a barrier to their completion, and have been trying to circumvent the co-op requirement. These students also exert pressure for different kinds of placement services, since they are more interested in transfer opportunities than in employment information. While the numbers of transfer-oriented students are still small and these pressures are not yet substantial, they illustrate a general problem in comprehensive institutions with both occupational and transfer purposes: In an educational "system" in which there is a clearly-defined hierarchy, with academic programs and the baccalaureate at (or near) the top, school-to-work programs may be seen as second-class programs and may be undermined by a lack of commitment to efforts combining school-based and work-based learning.

Still another element of public support involves publicity around co-op and work-based learning: a number of employers and educators suggested that the state should take on a greater role in promoting the benefits of co-op to employers and colleges. As one employer commented about her priorities for public funding:

> I have probably different wants and desires than the colleges do. I want to get co-op publicized. I mean I want it to be a way of life in everything we do. I'm not asking for money because we don't need the money to run the program at [my company]. That's not what we're looking for. I just want it to get the recognition of how important it is, give us a chance to get out there and show them. And I strongly support the colleges. I want to make sure those colleges have enough money for enough professors so that the students can get all the classes they need. And that's what bothers me is that if the money is not there, then they cannot have full time, year round school so that students can get their college classes in the summer time. I guess probably that's the thing that worries me the most is that the funding is there for the schools so they can offer those classes and co-op can exist.

In addition, the notion of providing some funding for the *employer* component — either directly, or through a wage subsidy — was raised consistently, though there were two distinct camps of employers. Some were not interested in wage subsidies, or said that subsidies would have little affect on their current co-op programs, while others were eager to have this incentive. Those on the side of more government funding included a small employer who thought that his company would hire more co-ops if there were financial incentives to do so, as well as a large company which experienced a significant reduction in their workforce due to corporate downsizing — suggesting that size is not the only

distinguishing feature of those wanting more financial incentives. (The latter company does not hire co-ops as permanent employees anymore upon graduation, and thus uses co-ops as cost-efficient labor.) The former company felt that, as a small firm, they might hire more coops if there were financial incentives to do so:

> It would be great to see some tax abatement or something like that. Again for a small company particularly, I think it would encourage us to use it more. And if it helps offset some costs we might be able to use more coops.

One employer suggested a subsidy for students rather than companies, in essence a loan forgiveness program for students who co-op:

> Don't pay us, pay the student. I'm not looking for money specifically but if we all had to pay let's say four or five dollars instead of seven or whatever it is, the government would pick up the difference, it would be easier for us to have more co-op positions. For instance, if the student came in with their own training dollars from the government. In other words I don't want to be involved necessarily, "give it to us, we give it to them" type of thing but rather the government helps the student . And I think the government could look at ways like that to help themselves as opposed to "we'll loan it to you when you come back later" type thing. We hope that certainly the government could help some colleges and universities, I think in terms of helping their labs; they really could have more up-to-date equipment. Right now much of it falls on private industry [to provide equipment].

A third role for government that employers mentioned involved the employment status of co-op students. Ohio does not consider students working while enrolled in college to be employees eligible for unemployment compensation or workman's compensation. This fact was cited by employers and co-op coordinators alike as helping make the programs work so well; as one manager stated:

> What the state does for us right now is, they do not consider co-ops employees. So if we or the co-op terminate the employment relationship, we're not liable for unemployment. That's a big deal. A change in that would change our attitude towards our co-op program.

That is, employers and educators alike want to maintain the flexibility of co-op as something different from a conventional employment relationship, with fewer penalties if a co-op student does not work out. This reflects in part the view of co-op as a "try-out" relationship, in which students and employers alike are testing their preferences and the match between employer and employee.

The "high-quality equilibrium"

The quality of the co-op programs in Cincinnati is important to their persistence. Colleges screen their students so that they send only those who are academically well-prepared and committed to their postsecondary education; in addition, they often screen on behalf of employers for motivation, persistence and other personal qualities. For their part, employers try to provide placements of high quality, knowing that the applicant pool will dwindle if placements are routine and unrewarding; and most have their own screening mechanisms, particularly for the personal qualities — eagerness and enthusiasm, the ability to work with others, dependability and stability, well-roundedness — that they value more than either grades or specific technical skills. The maintenance of high quality by both educators and employers has prevented the Cincinnati programs from fall into a "low-quality equilibrium", as has happened to other work experience and job training programs. A high-quality equilibrium is also an antidote to the negative perceptions of program quality that the General Accounting Office identified as a barrier to school-to-work programs (GAO, 1991).[24]

In Cincinnati, the high-quality equilibrium has been established not through skill standards, certificates of mastery, complex agreements with employers, or other similar accountability mechanisms.[25] Instead, clear expectations on the part of employers and educators alike, established in face-to-face contact and constant discussion between co-op coordinators and employer representatives, appear to be the most common mechanisms of establishing and enforcing the high-quality equilibrium. Indeed, it is tempting to argue that these personal connections are crucial to the close working relationships between educators and employers that distinguish the Cincinnati labor market from others; impersonal and bureaucratic forms of control like skill standards may actually *impede* close working relationships. For school-to-work programs, these findings suggest that the rhetoric around skill standards should be moderated, since they may not accomplish what their advocates claim. However, efforts to develop "high-quality equilibria" in fledgling programs should continue, particularly by establishing close working relationships between education providers and employers.

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[24] While the GAO report concentrated on high school programs, these barriers are discussed in the literature on college co-op as well (Harsher, 1987).

[25] In asking employers about what federal and state policies could advance work-based education, we consistently probed about the value of skill standards. While it impossible to prove that such mechanisms would not be useful from the responses of individuals who don't use them, the lack of support for skill standards and certificates of mastery (or other credentials aside from the Associate degree) was uniform and striking. It is possible that the rejection of the need for skill standards comes about because the high-quality equilibrium makes them unnecessary — but that in other regions some initial guarantor of quality might still be necessary.

The challenges of equitable access

The flip side of the "high-quality equilibrium" is, at least potentially, the issue of equitable access. The screening measures used in establishing programs of high quality have been designed to eliminate individuals with deficiencies in basic academic skills, with poor academic performance, with casual or part-time attendance and low commitment to postsecondary education, and with poor attitudes, persistence, and motivation. Almost inevitably, these screens must have eliminated many of the non-traditional students who enter community colleges, including those with mediocre academic records and "experimenters" unsure of their goals in postsecondary education — though all of the colleges developed some kinds of remedial or "pre-tech" programs to allow such students to overcome such problems. But these efforts all took place *prior* to enrollment in co-op, because the high-quality equilibrium will fall apart if the performance of students on the job is deficient.

This finding suggests that school-to-work programs should provide any remediation necessary, or affirmative action recruitment to enroll more minority students, or sex equity efforts to get more women into traditionally-male occupations, within the school-based component prior to work-based placement. They can also use the benefits of work-based placements as a motivation to get lackadaisical or uncommitted students to change their ways. But to apply remedial efforts or affirmative action at the stage when students are already on the job will inevitably erode the support of employers, and undermine the high-quality equilibrium.

The vision and promise of school-to-work programs are that a combination is more powerful than either component alone. The greatest lesson of the Cincinnati experience is that this vision can be achieved under the right conditions: the commitment to occupational preparation by educational institutions; a stable funding source, particularly for co-op coordinators; a parallel commitment by employers, particularly when they appreciate the educational value of work placements in "grow your own" programs; a "high-quality" equilibrium sustained by the commitment of each side to high quality; and a consistency between the work-based and school-based components created by constant interaction between educators and employers. Under these conditions, a uniquely American form of school-to-work programs has evolved in Cincinnati — and by implication can develop elsewhere.

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